

LESSON

23

What is electrical resistance?

* In your notebook, define resistance in regards to electricity. Explain what affects it.

Imagine that you are walking against a strong wind. It isn't easy to walk. The wind is slowing you down. It is trying to stop you. We say the wind resists your movement.

Everything that moves meets some kind of **resistance**. Even electricity meets resistance.

Electric wire resists the flow of electrons. It tries to stop the electrons. The resistance makes the atoms and molecules rub together. This rubbing, or friction, builds heat. The greater the resistance, the greater the heat.

Electrical resistance can be slight—or very great—or in-between. Resistance depends mainly on three things. They are: wire length, wire thickness, and the kind of metal the wire is made of.

LENGTH OF WIRE Long wires resist electricity more than short wires do. The longer the wire, the more resistance.

THICKNESS OF WIRE Thin wires resist electricity more than thick wires do. The thinner the wire, the greater the resistance.

KIND OF METAL Some metals resist electricity more than others. Silver resists electricity the least. Copper resists electricity less than most metals. Metals that offer little resistance are good for electrical wiring. Most electrical wiring is made of copper.

Nichrome [NIE krome] is made of nickel and chromium. Nichrome offers great resistance to electricity. Metals that offer great resistance are good for producing heat. They can be used in toasters and electric irons.

Two wires A and B are shown below. They are the same length.

How are they different?

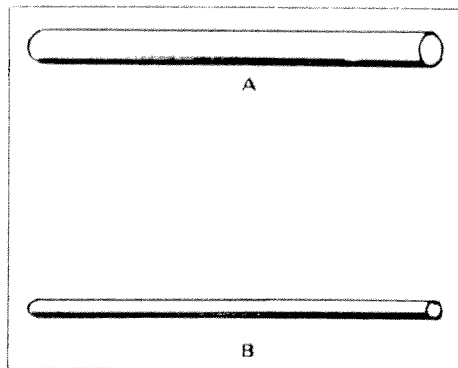


Figure A

Now fill in the blanks below using the letters A and B.

1. Electrons have more room to move along wire _____.
2. Electrons have less room to move along wire _____.
3. Electrons rub more along wire _____.
4. Electrons rub less along wire _____.
5. Which wire resists the electrons more? _____
6. Which wire resists the electrons less? _____
7. There is more friction along wire _____.
8. There is less friction along wire _____.
9. Which wire stays cooler? _____
10. Which wire becomes warmer? _____
11. Thin wire resists electricity _____ than thick wire.
more, less